

★ TOFU U11 U14 94-161352/20 ★ JP06102540-A  
Electrochromic element - has electrolyte filling film obtd. by filling  
soln. of viologen cpd. in polyethylene oxide electrolyte in pores of  
solid porous polymer thin film

TONEN CORP 92.02.28 92JP-044132

A85 L02 P81 (A25) (94.04.15) G02F 1/15, C09K 9/02  
Element has an electrolyte thin film prep'd. by filling a soln. contg. a  
viologen deriv. dissolved in a polyethylene oxide type electrolyte, in  
pores of a solid polymer porous thin film.

USE/ADVANTAGE - The element is suitable for several 10 cm  
sq. area size. It has lower prodn. costs.

An electrochromic device was prep'd. by lamination of a glass  
substrate, an 0.1-10 micron thick opposing electrode (e.g. composite  
C), a back plate (e.g. mixt. of alumina and a binder), a 4-20 microns  
thick solid state electrolyte film (e.g. Li-tri-fluoro-methane-  
sulphonate and a Viologen cpd. dissolved in polyethylene glycol  
mono-ether, and impregnated into a porous polyethylene), an 0.1-0.2  
micron thick ITO transparent electric conductive film and a glass  
plate in order. (4pp Dwg.No.0/2)

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## PATENT ABSTRACTS OF JAPAN

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states:(71) Applicant: **TONEN CORP**(72) Inventor: **MIYATA KUMIKO  
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### (54) ELECTROCHROMIC ELEMENT

(57) Abstract:

PURPOSE: To provide the electrochromic element which can make multicolor display by packing a soln. prep'd. by dissolving a biologen deriv. into a polyethylene(PE) oxide electrolyte into the holes of a solid-state high-polymer porous thin film.

CONSTITUTION: The biologen deriv. is dissolved into the PE oxide electrolyte of about 100 to 1000 mol.wt. to prepare the soln. and this soln. is packed into the pores of the solid-state high-polymer porous thin film. Polyolefin, polytetrafluoroethylene, etc., are usable as the solid-state high-polymer porous thin film. The polyolefins having  $\geq 5 \times 10^5$  weight mol.wt. are more preferable for the ease of designing a porous structure and compatibly attaining thinner films and higher mechanical strength. The biologen deriv. refers to 4,4'-bipyridine deriv. and is the oxidation reduction type compd., the oxidation type of which is colorless and the reduction type of which is blue to